Release notes for ENDF/B Development g-092_U_233 evaluation

December 2, 2016

- `checkr` Warnings:

1. A previous error halted parsing of the current section
   MAT=9222, MF= 1, MT=451 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 1, MT=451
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER       40 TO      51
```

2. Although the ENDF manual says MT=18/MF=4 is allowed only for the neutron sublibrary, this is too restrictive as all fission events lead to emitted neutrons
   MAT=9222, MF= 4, MT= 5 (0): Ang. dist. OK

```
ERROR(S) FOUND IN MAT=9222, MF= 4, MT=  5
   FILE  4 ALLOWED ONLY IN A NEUTRON DATA SUBLIBRARYRECORD NUMBER     231
```

3. A previous error halted parsing of the current section
   MAT=9222, MF= 4, MT= 5 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 4, MT=  5
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      231 TO     233
```

4. Although the ENDF manual says MT=18/MF=4 is allowed only for the neutron sublibrary, this is too restrictive as all fission events lead to emitted neutrons
   MAT=9222, MF= 4, MT= 16 (0): Ang. dist. OK

```
ERROR(S) FOUND IN MAT=9222, MF= 4, MT= 16
   FILE  4 ALLOWED ONLY IN A NEUTRON DATA SUBLIBRARYRECORD NUMBER     234
```

5. A previous error halted parsing of the current section
   MAT=9222, MF= 4, MT= 16 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 4, MT= 16
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      234 TO     236
```

6. Although the ENDF manual says MT=18/MF=4 is allowed only for the neutron sublibrary, this is too restrictive as all fission events lead to emitted neutrons
   MAT=9222, MF= 4, MT= 18 (0): Ang. dist. OK

```
ERROR(S) FOUND IN MAT=9222, MF= 4, MT= 18
   FILE  4 ALLOWED ONLY IN A NEUTRON DATA SUBLIBRARYRECORD NUMBER     237
```

7. A previous error halted parsing of the current section
   MAT=9222, MF= 4, MT= 18 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 4, MT= 18
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      237 TO     239
```

8. Although the ENDF manual says MT=18/MF=5 (PFNS) and MT=455 (nubar) are allowed only for the neutron sublibrary, this is too restrictive as all fission events lead to emitted neutrons.
   MAT=9222, MF= 5, MT= 5 (0): PFNS, nubar OK

```
ERROR(S) FOUND IN MAT=9222, MF= 5, MT=  5
   FILE  5 NOT ALLOWED FOR NSUB =     0             RECORD NUMBER     241
```

9. A previous error halted parsing of the current section
MAT=9222, MF= 5, MT= 5 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 5, MT=  5
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      241 TO     249
```

10. Although the ENDF manual says MT=18/MF=5 (PFNS) and MT=455 (nubar) are allowed only for the neutron sublibrary, this is too restrictive as all fission events lead to emitted neutrons.
MAT=9222, MF= 5, MT= 16 (0): PFNS, nubar OK

```
ERROR(S) FOUND IN MAT=9222, MF= 5, MT= 16
   FILE  5 NOT ALLOWED FOR NSUB =     0             RECORD NUMBER     250
```

11. A previous error halted parsing of the current section
MAT=9222, MF= 5, MT= 16 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 5, MT= 16
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      250 TO     257
```

12. Although the ENDF manual says MT=18/MF=5 (PFNS) and MT=455 (nubar) are allowed only for the neutron sublibrary, this is too restrictive as all fission events lead to emitted neutrons.
MAT=9222, MF= 5, MT= 18 (0): PFNS, nubar OK

```
ERROR(S) FOUND IN MAT=9222, MF= 5, MT= 18
   FILE  5 NOT ALLOWED FOR NSUB =     0             RECORD NUMBER     258
```

13. A previous error halted parsing of the current section
MAT=9222, MF= 5, MT= 18 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=9222, MF= 5, MT= 18
   SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      258 TO     265
```

- `checkr` Errors:

1. A variable is outside the allowed ENDF range
MAT=9222, MF= 1, MT=451 (0): Variable range

```
ERROR(S) FOUND IN MAT=9222, MF= 1, MT=451
   MOD =     1 OUT OF RANGE     0 -     0           RECORD NUMBER      40
```

2. Missing a section/file
MAT=9222, MF= 1, MT=456 (0): Missing data (a)

```
ERROR(S) FOUND IN MAT=9222, MF= 1, MT=456
   THIS SECTION REQUIRES THE PRESENCE OF SECTION  1/RECORD NUMBER      52
```

3. Missing nubar_total or LFI flag is set wrong
MAT=9222, MF= 1, MT=456 (1): No nubar_tot

```
ERROR(S) FOUND IN MAT=9222, MF= 1, MT=456
   LFI INCORRECT OR NUBAR-TOTAL MISSING   PRECEDING RECORD NUMBER      58
```

4. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9222, MF= 3, MT= 3 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9222, MF= 3, MT=  3
   SECTION  3/  3 NOT IN DIRECTORY                  RECORD NUMBER      58
```

5. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9222, MF= 3, MT= 5 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9222, MF= 3, MT=  5
   SECTION  3/  5 NOT IN DIRECTORY                  RECORD NUMBER     139
```

6. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9222, MF= 3, MT= 16 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9222, MF= 3, MT= 16
   SECTION  3/ 16 NOT IN DIRECTORY                  RECORD NUMBER     191
```

7. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9222, MF= 3, MT= 18 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9222, MF= 3, MT= 18
   SECTION  3/ 18 NOT IN DIRECTORY                  RECORD NUMBER     199
```

- `fizcon` Errors:

1. Missing files (probably nubar)
   MAT=9222, MF= 1, MT=456 (1): Missing files (b)

```
ERROR(S) FOUND IN MAT=9222, MF= 1, MT=456
   THIS SECTION REQUIRES THAT MISSING FILE  1, MT= 452  BE PRESENT
```

2. Missing files (probably nubar)
   MAT=9222, MF= 1, MT=456 (2): Missing files (d)

```
ERROR(S) FOUND IN MAT=9222, MF= 1, MT=456
   BOTH SECTIONS MF=1, MT=455 AND MT=456 MUST BE PRESENT
```

3. Missing files (probably spectra for outgoing particles)
   MAT -1 MF 6 (1): Missing files (a)

```
ERROR(S) - MISSING SECTIONS IN MAT   -1 MF  6
   PRESENCE OF FILE 3, MT=   5 REQUIRES AN EQUIVALENT SECTION IN FILE 6
   PRESENCE OF FILE 3, MT=  16 REQUIRES AN EQUIVALENT SECTION IN FILE 6
   PRESENCE OF FILE 3, MT=  18 REQUIRES AN EQUIVALENT SECTION IN FILE 6
```

- `fudge-4.0` Warnings:

1. First cross section point not zero right at threshold
   reaction label 2: sumOfRemainingOutputChannels / Cross section: (Error # 0): nonZero_crossSection_at_thres

```
WARNING: First cross section point for threshold reaction should be 0, not 2e-06
```

2. Cross section does not match sum of linked reaction cross sections
   crossSectionSum label 0: nonelastic (Error # 0): CS Sum.

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 82.58%
```

- `fudge-4.0` Errors:

1. Calculated and tabulated Q values disagree.
   reaction label 0: n[multiplicity:'2'] + U231 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -12760288.00030518 eV vs -1.301e7 eV!
```

2. Calculated and tabulated thresholds don't agree
   reaction label 1: n[multiplicity:'energyDependent', emissionMode:'prompt'] [total fission] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 4.8e6 eV!
```

3. Calculated and tabulated Q values disagree.
   reaction label 2: sumOfRemainingOutputChannels (Error # 1): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 216135737299.8412 eV vs -5.743e6 eV!
```